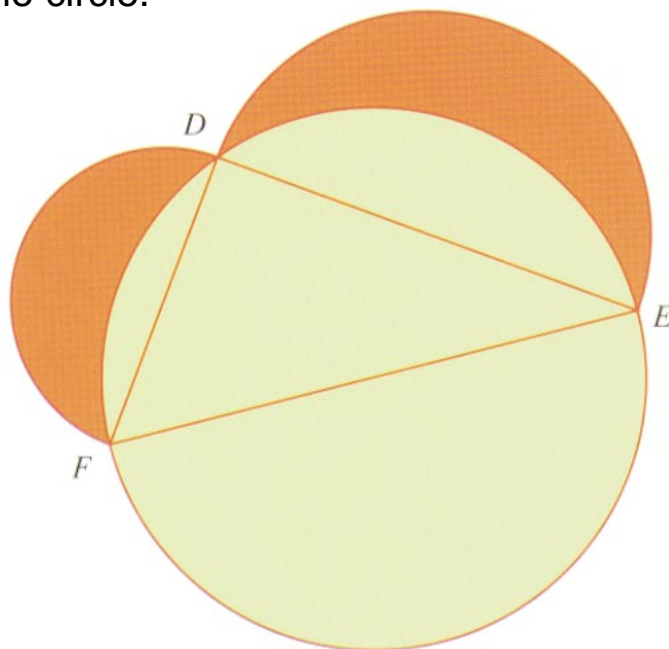


The Two Crescents

Problem-of-the-Week

The Problem

Prove that the sum of the areas of the two crescents is equal to the area of $\triangle DEF$. Side \overline{FE} passes through the diameter of the circle.



Strategies and Hints

1. Notice how the parts of the figure have been labeled at the right. If you can show that $a + b$ added to $c + d$ is equal to $b + x + d$, you will be just one step away from the completed proof. Show that this is the case.
2. In completing the proof, you will need a formula for the area of a semicircle that gives the area A in terms of the diameter d . Develop this needed formula.
3. Use the Pythagorean Theorem to relate the sides of $\triangle DEF$. Then multiply each side of your equation by $\frac{\pi}{8}$.

